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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,654	08/25/2003	Philip W. Ingham	HMSU-P17-006	5276
28120	7590	01/31/2008		
ROPE & GRAY LLP PATENT DOCKETING 39/41 ONE INTERNATIONAL PLACE BOSTON, MA 02110-2624			EXAMINER MACFARLANE, STACEY NEE	
			ART UNIT 1649	PAPER NUMBER
			MAIL DATE 01/31/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/647,654

Applicant(s)

INGHAM ET AL.

Examiner

Stacey MacFarlane

Art Unit

1649

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6, 11-13, 23-26 and 49-81 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-3, 5, 6, 11-13, 23-26 and 49-81 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 5, 2007 has been entered.

***Election/Restrictions***

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
- I. Claims 1-3, 6, 11-13, 60-62, 65-67, 74-78, in so far as they are drawn to a method for promoting one or more of proliferation, differentiation or survival of a dopaminergic or motor neuron comprising contacting said cell with a Sonic hedgehog polypeptide comprising SEQ ID NO: 8 or an N-terminal fragment thereof, classified in class 514, subclass 2, for example.
  - II. Claims 1-3, 6, 11-13, 60-62, 65-67, 74-78, in so far as they are drawn to a method for promoting one or more of proliferation, differentiation or survival of a dopaminergic or motor neuron comprising contacting said cell with a Sonic hedgehog polypeptide comprising SEQ ID NO: 11 or an N-terminal fragment thereof, classified in class 514, subclass 2, for example.
  - III. Claims 1-3, 6, 11-13, 60-62, 65-67, 74-78, in so far as they are drawn to a method for promoting one or more of proliferation, differentiation or

survival of a dopaminergic or motor neuron comprising contacting said cell with a Sonic hedgehog polypeptide comprising SEQ ID NO: 12 or an N-terminal fragment thereof, classified in class 514, subclass 2, for example.

- IV. Claims 1-3, 6, 11-13, 60-62, 65-67, 74-78, in so far as they are drawn to a method for promoting one or more of proliferation, differentiation or survival of a dopaminergic or motor neuron comprising contacting said cell with a Sonic hedgehog polypeptide comprising SEQ ID NO: 13 or an N-terminal fragment thereof, classified in class 514, subclass 2, for example.
- V. Claims 23-26, 49-59, 68-73, 79-81, in so far as they are drawn to a method for promoting a cell to differentiate into a dopaminergic or motor neuron comprising contacting said cell with a Sonic hedgehog polypeptide comprising SEQ ID NO: 8 or an N-terminal fragment thereof, classified in class 435, subclass 377, for example.
- VI. Claims 23-26, 49-59, 68-73, 79-81, in so far as they are drawn to a method for promoting a cell to differentiate into a dopaminergic or motor neuron comprising contacting said cell with a Sonic hedgehog polypeptide comprising SEQ ID NO: 11 or an N-terminal fragment thereof, classified in class 435, subclass 377, for example.
- VII. Claims 23-26, 49-59, 68-73, 79-81, in so far as they are drawn to a method for promoting a cell to differentiate into a dopaminergic or motor neuron comprising contacting said cell with a Sonic hedgehog polypeptide

comprising SEQ ID NO: 12 or an N-terminal fragment thereof, classified in class 435, subclass 377, for example.

VIII. Claims 23-26, 49-59, 68-73, 79-81, in so far as they are drawn to a method for promoting a cell to differentiate into a dopaminergic or motor neuron comprising contacting said cell with a Sonic hedgehog polypeptide comprising SEQ ID NO: 13 or an N-terminal fragment thereof, classified in class 435, subclass 377, for example.

3. The inventions are independent or distinct, each from the other because:

Inventions of Groups V-VIII and I-IV are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product, and the species are patentably distinct (MPEP § 806.05(j)). In the instant case, the methods of Groups V-VIII are drawn to inducing a dopaminergic or motor neuron phenotype from a neural stem cell or otherwise undifferentiated cell. Such cells are intermediate products along the continuum of differentiation and, in the particular case of neural stem cells, are pluripotent and useful in processes to make other neuronal and non-neuronal cell types. The methods of Groups I through IV each require that the cell is already a dopaminergic or motor neuron cell, therefore the methods hinge upon the use of cells that are a final product of the invention of Groups V-VIII. Thus, the inventions are deemed patentably distinct because there is nothing on this record to show them to be obvious variants.

4. Inventions of Groups I-IV are directed to related processes. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed each require materially distinct polypeptides. The method of Group I requires the polypeptide of SEQ ID NO: 8, Group II the polypeptide of SEQ ID NO: 11, Group III the polypeptide of SEQ ID NO: 12 and the invention of Group IV requires the polypeptide of SEQ ID NO: 13. The instant disclosure states that these polypeptides represent structurally distinct Sonic hedgehog polypeptides from distinct species of animal. Therefore, the inventions as claimed do not encompass overlapping subject matter and precedent has maintained that even a single amino acid change does not constitute an obvious variant upon a polypeptide as that single amino acid change may vastly affect the physiological properties of the protein.

5. Inventions of Groups I through IV are directed to related processes. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed each require materially distinct polypeptides. The method of Group I requires the polypeptide of SEQ ID NO: 8, Group II the polypeptide of SEQ ID NO: 11, Group III the polypeptide of SEQ ID NO: 12 and the invention of

Group IV requires the polypeptide of SEQ ID NO: 13. The instant disclosure states that these polypeptides represent structurally distinct Sonic hedgehog polypeptides from distinct species of animal. Therefore, the inventions as claimed do not encompass overlapping subject matter and it is well known within the art that even a single amino acid change does not constitute an obvious variant upon a polypeptide as that single amino acid change may vastly affect the physiological properties of the protein.

6. Inventions of Groups V through VIII are directed to related processes. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed each require materially distinct polypeptides. The method of Group V requires the polypeptide of SEQ ID NO: 8, Group VI the polypeptide of SEQ ID NO: 11, Group VII the polypeptide of SEQ ID NO: 12 and the invention of Group VIII requires the polypeptide of SEQ ID NO: 13. Since these polypeptide sequences represent structurally distinct Sonic hedgehog polypeptides from distinct species of animal they neither encompass overlapping subject matter nor constitute an obvious variant upon one another.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

- (a) the inventions have acquired a separate status in the art in view of their different classification;
- (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
- (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);
- (d) the prior art applicable to one invention would not likely be applicable to another invention;
- (e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

**Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.**

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.



Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacey MacFarlane whose telephone number is (571) 270-3057. The examiner can normally be reached on M,W and ALT. F 6 am to 3 pm, T & R 5:30 am - 4 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Stucker can be reached on (571) 272-0911. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stacey MacFarlane  
Examiner  
Art Unit 1649

/SNM/

  
OLGA N. CHERNYSHEV, PH.D.  
PRIMARY EXAMINER